

Space Weather Forecast

Issued on Monday, 01 November 2021 at 00:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Slight chance of G1/Minor Storm intervals at first. Slight chance of M-class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was low, with several Common-class flares. There are currently four sunspot regions on the sun's visible face, one of which is rapidly fading. A flare just after 31/0700 UTC from a sunspot in the sun's northwest quadrant appears to have generated a coronal mass ejection (CME), analysis of which suggests a possible glancing blow at Earth late on 3rd or early 4th November. No other Earth-directed CMEs were seen.

Solar Wind / Geomagnetic Activity: The solar wind indicated of the arrival of a CME just after 31/0900 UTC, that departed the sun on 28th Oct. Speeds were at mostly background levels to start, but became more generally slightly elevated from 31/0915 UTC, with a peak of 464 km/s at 31/1907 UTC. The solar wind's magnetic field saw a jump from weak to moderate levels around 31/0915 UTC, before falling back to below average later. Its important north-south component saw a more significant negative deflection 31/1136 UTC, recorded after the CME arrival. Resultant geomagnetic activity was Quiet to Active.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) continued on a declining trend below Minor storm levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Low solar activity is forecast with a slight chance of moderate-class flares, most likely from the sunspot in the northeast quadrant.

Solar Wind / Geomagnetic Activity: Slightly elevated solar winds in the wake of CME impacts on 31st Oct are expected to return to background levels by day 2 (2nd Nov), but see a further increases under coronal hole influences from day 3 (3rd), perhaps combined with further weak CME effects. Unsettled to Active geomagnetic activity at first, is expected to become Quiet to Unsettled by day 2, and Quiet by day 3 (3rd). Unsettled conditions then again likely by day 4, with isolated Active intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to return to background levels by day 2 (2nd), with no further solar radiation storms forecast.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	20	5	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	20	20	20	10
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	5	5	5	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)